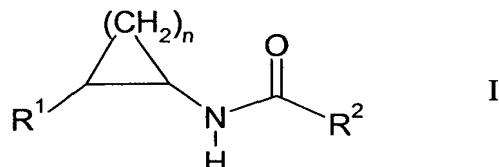


We Claim:

1. A compound of the formula I,



5

wherein:

- R¹ is aryl or heteroaryl, each of which is optionally substituted one or more times by C₁-C₆-alkyl, halogen, CF₃, C₁-C₆-alkoxy, C₁-C₆-alkylmercapto, -CN, COOR¹⁰, CONR¹¹R¹²,
10 NR¹³R¹⁴, S(O)_mR¹⁵ or S(O)₂NR¹⁶R¹⁷;

- R² is aryl or heteroaryl, each of which is optionally substituted one or more times by halogen, -CN, -NH₂, C₃-C₅-alkandiyyl, phenyl, heteroaryl, aryl-substituted C₁-C₄-alkyl, heteroaryl-substituted C₁-C₄-alkyl, -CF₃, -NO₂, -OH, phenoxy, benzyloxy, (C₁-C₁₀-alkyl)-COO-, -S(O)_mR²⁰, -SH, phenylamino, benzylamino, (C₁-C₁₀-alkyl)-CONH-, (C₁-C₁₀-alkyl)-CO-N(C₁-C₄-alkyl)-, phenyl-CONH-, phenyl-CO-N(C₁-C₄-alkyl)-, heteroaryl-CONH-, heteroaryl-CO-N(C₁-C₄-alkyl)-, (C₁-C₁₀-alkyl)-CO-, phenyl-CO-, heteroaryl-CO-, CF₃-CO-, -OCH₂O-, -OCF₂O-, -OCH₂CH₂O-, -CH₂CH₂O-, -COOR²¹, -CONR²²R²³, -C(NH)-NH₂, -SO₂NR²⁴R²⁵, R²⁶SO₂NH-, R²⁷SO₂N(C₁-C₆-alkyl)-,

- 20 optionally substituted C₁-C₁₀-alkyl, optionally substituted C₂-C₁₀-alkenyl, optionally substituted C₂-C₁₀-alkynyl, optionally substituted C₁-C₁₀-alkoxy, optionally substituted C₁-C₁₀-alkylamino, optionally substituted di(C₁-C₁₀-alkyl)amino, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the group consisting of F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, NH₂, C₁-C₈-alkylamino and di(C₁-C₈-alkyl)amino, or

25 a residue of a saturated or partially unsaturated aliphatic monocyclic 5- to 7-membered heterocycle containing 1, 2 or 3 heteroatoms selected from the group consisting of N, O and S, wherein the heterocycle is optionally substituted one or more times by halogen,

$C_1\text{-}C_3\text{-alkyl}$, $C_1\text{-}C_3\text{-alkoxy}$, OH, oxo or CF_3 , and wherein the heterocycle is optionally condensed to the aryl group or heteroaryl group representing R^2 , and

wherein for each aryl or heteroaryl as R^2 bearing an aryl, heteroaryl, phenyl, aryl-containing, heteroaryl-containing or phenyl-containing group as an optional substituent, that

5 each aryl, heteroaryl, phenyl, aryl-containing, heteroaryl-containing and phenyl-containing group is optionally substituted one or more times by halogen, -CN, $C_1\text{-}C_3\text{-alkyl}$, OH, $C_1\text{-}C_3\text{-alkoxy}$ or CF_3 ;

R^{10} is H, $C_1\text{-}C_6\text{-alkyl}$ or benzyl, wherein the phenyl group of the benzyl is optionally
10 substituted one or more times by halogen, -CN, $C_1\text{-}C_3\text{-alkyl}$, $C_1\text{-}C_3\text{-alkoxy}$ or CF_3 ;

R^{11} is H, $C_1\text{-}C_6\text{-alkyl}$, which is optionally substituted by phenyl, phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is optionally substituted one or more times by halogen, -CN, $C_1\text{-}C_3\text{-alkyl}$, $C_1\text{-}C_3\text{-alkoxy}$ or CF_3 ;

15

R^{12} is H or $C_1\text{-}C_6\text{-alkyl}$;

R^{13} is H, $C_1\text{-}C_6\text{-alkyl}$,

optionally substituted phenyl, optionally substituted benzyl, optionally

20 substituted heteroaryl, optionally substituted phenyl-CO-, or optionally substituted heteroaryl-CO-, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the group consisting of halogen, -CN, $C_1\text{-}C_3\text{-alkyl}$, $C_1\text{-}C_3\text{-alkoxy}$ and CF_3 ;

25 R^{14} is H or $C_1\text{-}C_6\text{-alkyl}$;

R^{15} is $C_1\text{-}C_6\text{-alkyl}$, CF_3 ,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the

30 group consisting of halogen, -CN, $C_1\text{-}C_3\text{-alkyl}$, $C_1\text{-}C_3\text{-alkoxy}$ and CF_3 ;

R¹⁶ is H, C₁-C₆-alkyl, which is optionally substituted by phenyl, phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl, and heteroaryl is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

5 R¹⁷ is H or C₁-C₆-alkyl;

R²⁰ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino, CF₃,

10 optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

R²¹ is H,

15 C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, C₁-C₈-alkoxy or di(C₁-C₈-alkyl)amino,
aryl-(C₁-C₄-alkyl)- or heteroaryl-(C₁-C₄-alkyl)-, wherein each of the aryl-(C₁-C₄-alkyl)- or heteroaryl-(C₁-C₄-alkyl)- is optionally substituted one or more times by halogen, C₁-C₄-alkyl, C₁-C₄-alkoxy or di(C₁-C₆-alkyl)amino;

20 R²² is H, C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, C₁-C₈-alkoxy, di(C₁-C₈-alkyl)amino or phenyl,
phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

25 R²³ is H or C₁-C₁₀-alkyl;

R²⁴ is H, C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, C₁-C₈-alkoxy, di(C₁-C₈-alkyl)amino or phenyl,

30 phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

R²⁵ is H or C₁-C₁₀-alkyl;

R²⁶ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH,
C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino,

5 CF₃,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional
substituents of the optionally substituted phenyl and heteroaryl are selected from one or more
of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

10 R²⁷ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH,
C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino,
CF₃,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional
substituents of the optionally substituted phenyl and heteroaryl are selected from one or more
15 of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

wherein heteroaryl is a residue of a 5-membered to 10-membered, aromatic,
monocyclic or bicyclic heterocycle containing one or more heteroatoms selected from the
group consisting of N, O and S;

20 wherein aryl is phenyl, naphth-1-yl or naphth-2-yl;

m is 0, 1 or 2; and

25 n is 1, 2, 3 or 4;

or a stereoisomer or a mixture of stereoisomers in any ratio of the compound, or a
pharmaceutically acceptable salt of the compound, stereoisomer or mixture of stereoisomers
of the compound;

30 provided that when R¹ is unsubstituted phenyl, then R² is other than unsubstituted phenyl, 4-
bromophenyl, 3-methoxyphenyl, chlorosubstituted 4H-thieno[3,2-b]pyrrol-5-yl, unsubstituted

thienyl, naphthyridinyl, unsubstituted pyridinyl, 3-hydroxy-4-methoxypyridin-2-yl, 2,6-dichloropyridin-4-yl or 3,4,5-trimethoxyphenyl.

2. The compound according to claim 1 wherein R¹ is optionally substituted phenyl.

5

3. The compound according to claim 1 wherein R¹ is optionally substituted monocyclic 5-membered or optionally substituted monocyclic 6-membered heteroaryl.

4. The compound according to claim 1 wherein n is 1.

10

5. The compound according to claim 1 wherein n is 3.

6. The compound according to claim 1 wherein R² is phenyl or heteroaryl, each of which is optionally substituted one or more times by F, Cl, Br, C₁-C₃-alkyl, C₁-C₃-alkoxymethyl, 2-

15 amino-3,3,3-trifluoropropyl-, CF₃, C₃-C₅-alkandiyil, phenyl, heteroaryl, benzyl, heteroaryl-methyl-, OH, C₁-C₃-alkoxy, phenoxy, trifluoromethoxy, 2,2,2-trifluoroethoxy, (C₁-C₄-alkyl)-COO, C₁-C₃-alkylmercapto, phenylmercapto, C₁-C₃-alkylsulfonyl, phenylsulfonyl, NH₂, C₁-C₄-alkylamino, di(C₁-C₄-alkyl)amino, (C₁-C₃-alkyl)-CONH-, (C₁-C₃-alkyl)-SO₂NH-, (C₁-C₃-alkyl)-CO-, phenyl-CO-, -OCH₂O-, -OCF₂O-, -CH₂CH₂O-, COO(C₁-C₄-alkyl), -CONH₂,

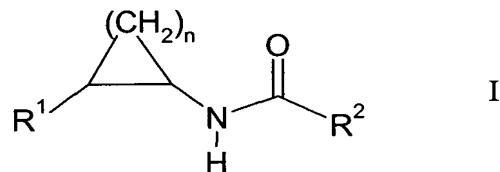
20 -CONH(C₁-C₄-alkyl), -CON(di(C₁-C₄-alkyl)), -CN, -SO₂NH₂, -SO₂NH(C₁-C₄-alkyl), -SO₂N(di(C₁-C₄-alkyl)), pyrrolidinyl, piperidinyl, morpholinyl or thiomorpholinyl, and

wherein for each phenyl or heteroaryl as R² bearing an heteroaryl, phenyl, heteroaryl-containing or phenyl-containing group as an optional substituent, that each heteroaryl, phenyl, heteroaryl-containing and phenyl-containing group is optionally substituted one or

25 more times by halogen, -CN, C₁-C₃-alkyl, OH, C₁-C₃-alkoxy or CF₃.

30

7. A pharmaceutical preparation, comprising a pharmaceutically effective amount of a compound of formula I,



wherein:

5

R¹ is aryl or heteroaryl, each of which is optionally substituted one or more times by C₁-C₆-alkyl, halogen, CF₃, C₁-C₆-alkoxy, C₁-C₆-alkylmercapto, -CN, COOR¹⁰, CONR¹¹R¹², NR¹³R¹⁴, S(O)_mR¹⁵ or S(O)₂NR¹⁶R¹⁷;

- 10 R² is aryl or heteroaryl, each of which is optionally substituted one or more times by halogen, -CN, -NH₂, C₃-C₅-alkandiyl, phenyl, heteroaryl, aryl-substituted C₁-C₄-alkyl, heteroaryl-substituted C₁-C₄-alkyl, -CF₃, -NO₂, -OH, phenoxy, benzyloxy, (C₁-C₁₀-alkyl)-COO-, -S(O)_mR²⁰, -SH, phenylamino, benzylamino, (C₁-C₁₀-alkyl)-CONH-, (C₁-C₁₀-alkyl)-CO-N(C₁-C₄-alkyl)-, phenyl-CONH-, phenyl-CO-N(C₁-C₄-alkyl)-, heteroaryl-CONH-,
- 15 heteroaryl-CO-N(C₁-C₄-alkyl)-, (C₁-C₁₀-alkyl)-CO-, phenyl-CO-, heteroaryl-CO-, CF₃-CO-, -OCH₂O-, -OCF₂O-, -OCH₂CH₂O-, -CH₂CH₂O-, -COOR²¹, -CONR²²R²³, -C(NH)-NH₂, -SO₂NR²⁴R²⁵, R²⁶SO₂NH-, R²⁷SO₂N(C₁-C₆-alkyl)-,
- optionally substituted C₁-C₁₀-alkyl, optionally substituted C₂-C₁₀-alkenyl, optionally substituted C₂-C₁₀-alkynyl, optionally substituted C₁-C₁₀-alkoxy, optionally substituted C₁-C₁₀-alkylamino, optionally substituted di(C₁-C₁₀-alkyl)amino, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the group consisting of F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, NH₂, C₁-C₈-alkylamino and di(C₁-C₈-alkyl)amino, or
- 20 a residue of a saturated or partially unsaturated aliphatic monocyclic 5- to 7-membered heterocycle containing 1, 2 or 3 heteroatoms selected from the group consisting of N, O and S, wherein the heterocycle is optionally substituted one or more times by halogen, C₁-C₃-alkyl, C₁-C₃-alkoxy, OH, oxo or CF₃, and wherein the heterocycle is optionally condensed to the aryl group or heteroaryl group representing R², and
- 25

wherein for each aryl or heteroaryl as R² bearing an aryl, heteroaryl, phenyl, aryl-containing, heteroaryl-containing or phenyl-containing group as an optional substituent, that each aryl, heteroaryl, phenyl, aryl-containing, heteroaryl-containing and phenyl-containing group is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, OH, C₁-C₃-alkoxy or CF₃;

5 alkoxy or CF₃;

R¹⁰ is H, C₁-C₆-alkyl or benzyl, wherein the phenyl group of the benzyl is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

10 R¹¹ is H, C₁-C₆-alkyl, which is optionally substituted by phenyl, phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

R¹² is H or C₁-C₆-alkyl;

15 R¹³ is H, C₁-C₆-alkyl,
optionally substituted phenyl, optionally substituted benzyl, optionally substituted heteroaryl, optionally substituted phenyl-CO-, or optionally substituted heteroaryl-CO-, wherein the optional substituents of the optionally substituted substituents
20 are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

R¹⁴ is H or C₁-C₆-alkyl;

25 R¹⁵ is C₁-C₆-alkyl, CF₃,
optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

30 R¹⁶ is H, C₁-C₆-alkyl, which is optionally substituted by phenyl, phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl, and heteroaryl is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

R¹⁷ is H or C₁-C₆-alkyl;

R²⁰ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino,

5 CF₃,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

10 R²¹ is H,

C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, C₁-C₈-alkoxy or di(C₁-C₈-alkyl)amino,

aryl-(C₁-C₄-alkyl)- or heteroaryl-(C₁-C₄-alkyl)-, wherein each of the aryl-(C₁-C₄-alkyl)- or heteroaryl-(C₁-C₄-alkyl)- is optionally substituted one or more times by halogen,

15 C₁-C₄-alkyl, C₁-C₄-alkoxy or di(C₁-C₆-alkyl)amino;

R²² is H, C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, C₁-C₈-alkoxy, di(C₁-C₈-alkyl)amino or phenyl,

phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is

20 optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

R²³ is H or C₁-C₁₀-alkyl;

R²⁴ is H, C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, C₁-C₈-

25 alkoxy, di(C₁-C₈-alkyl)amino or phenyl,

phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is

optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

R²⁵ is H or C₁-C₁₀-alkyl;

30

R²⁶ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino,

CF₃,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

5

R²⁷ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino, CF₃,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

wherein heteroaryl is a residue of a 5-membered to 10-membered, aromatic, monocyclic or bicyclic heterocycle containing one or more heteroatoms selected from the group consisting of N, O and S;

wherein aryl is phenyl, naphth-1-yl or naphth-2-yl;

m is 0, 1 or 2; and

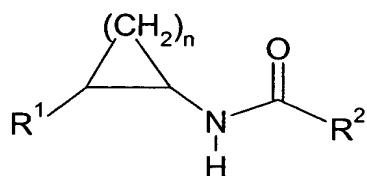
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n is 1, 2, 3 or 4;

or a stereoisomer or a mixture of stereoisomers in any ratio of the compound, or a pharmaceutically acceptable salt of the compound, stereoisomer or mixture of stereoisomers 25 of the compound;

and a pharmaceutically acceptable carrier.

8. A method for the stimulation of the expression of endothelial NO synthase, in a patient in need thereof, comprising administering to such patient a pharmaceutically effective amount of a compound of formula I,



wherein:

R^1 is aryl or heteroaryl, each of which is optionally substituted one or more times by

- 5 C_1 - C_6 -alkyl, halogen, CF_3 , C_1 - C_6 -alkoxy, C_1 - C_6 -alkylmercapto, -CN, $COOR^{10}$, $CONR^{11}R^{12}$, $NR^{13}R^{14}$, $S(O)_mR^{15}$ or $S(O)_2NR^{16}R^{17}$;

R^2 is aryl or heteroaryl, each of which is optionally substituted one or more times by halogen, -CN, -NH₂, C_3 - C_5 -alkandiyl, phenyl, heteroaryl, aryl-substituted C_1 - C_4 -alkyl,

- 10 heteroaryl-substituted C_1 - C_4 -alkyl, - CF_3 , -NO₂, -OH, phenoxy, benzyloxy, (C_1 - C_{10} -alkyl)-COO-, -S(O)_mR²⁰, -SH, phenylamino, benzylamino, (C_1 - C_{10} -alkyl)-CONH-, (C_1 - C_{10} -alkyl)-CO-N(C_1 - C_4 -alkyl)-, phenyl-CONH-, phenyl-CO-N(C_1 - C_4 -alkyl)-, heteroaryl-CONH-, heteroaryl-CO-N(C_1 - C_4 -alkyl)-, (C_1 - C_{10} -alkyl)-CO-, phenyl-CO-, heteroaryl-CO-, CF_3 -CO-, -OCH₂O-, -OCF₂O-, -OCH₂CH₂O-, -CH₂CH₂O-, -COOR²¹, -CONR²²R²³, -C(NH)-NH₂, -
- 15 SO₂NR²⁴R²⁵, R²⁶SO₂NH-, R²⁷SO₂N(C_1 - C_6 -alkyl)-,

optionally substituted C_1 - C_{10} -alkyl, optionally substituted C_2 - C_{10} -alkenyl, optionally substituted C_2 - C_{10} -alkynyl, optionally substituted C_1 - C_{10} -alkoxy, optionally substituted C_1 - C_{10} -alkylamino, optionally substituted di(C_1 - C_{10} -alkyl)amino, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the

- 20 group consisting of F, OH, C_1 - C_8 -alkoxy, aryloxy, C_1 - C_8 -alkylmercapto, NH₂, C_1 - C_8 -alkylamino and di(C_1 - C_8 -alkyl)amino, or
- a residue of a saturated or partially unsaturated aliphatic monocyclic 5- to 7-membered heterocycle containing 1, 2 or 3 heteroatoms selected from the group consisting of N, O and S, wherein the heterocycle is optionally substituted one or more times by halogen,
- 25 C_1 - C_3 -alkyl, C_1 - C_3 -alkoxy, OH, oxo or CF_3 , and wherein the heterocycle is optionally condensed to the aryl group or heteroaryl group representing R^2 , and
- wherein for each aryl or heteroaryl as R^2 bearing an aryl, heteroaryl, phenyl, aryl-containing, heteroaryl-containing or phenyl-containing group as an optional substituent, that each aryl, heteroaryl, phenyl, aryl-containing, heteroaryl-containing and phenyl-containing

group is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, OH, C₁-C₃-alkoxy or CF₃;

R¹⁰ is H, C₁-C₆-alkyl or benzyl, wherein the phenyl group of the benzyl is optionally

- 5 substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

R¹¹ is H, C₁-C₆-alkyl, which is optionally substituted by phenyl, phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

10

R¹² is H or C₁-C₆-alkyl;

R¹³ is H, C₁-C₆-alkyl,

optionally substituted phenyl, optionally substituted benzyl, optionally

- 15 substituted heteroaryl, optionally substituted phenyl-CO-, or optionally substituted heteroaryl-CO-, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

20

R¹⁴ is H or C₁-C₆-alkyl;

R¹⁵ is C₁-C₆-alkyl, CF₃,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the

- 25 group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

R¹⁶ is H, C₁-C₆-alkyl, which is optionally substituted by phenyl, phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl, and heteroaryl is optionally substituted one or more times by halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy or CF₃;

30

R¹⁷ is H or C₁-C₆-alkyl;

R^{20} is $C_1\text{-}C_{10}\text{-alkyl}$, which is optionally substituted one or more times by F, OH, $C_1\text{-}C_8\text{-alkoxy}$, aryloxy, $C_1\text{-}C_8\text{-alkylmercapto}$, $C_1\text{-}C_8\text{-alkylamino}$, or $\text{di}(C_1\text{-}C_8\text{-alkyl})\text{amino}$, CF_3 ,

- optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional
5 substituents of the optionally substituted phenyl and heteroaryl are selected from one or more
of the group consisting of halogen, -CN, $C_1\text{-}C_3\text{-alkyl}$, $C_1\text{-}C_3\text{-alkoxy}$ and CF_3 ;

R^{21} is H,

- $C_1\text{-}C_{10}\text{-alkyl}$, which is optionally substituted one or more times by F, $C_1\text{-}C_8\text{-alkoxy}$ or
10 $\text{di}(C_1\text{-}C_8\text{-alkyl})\text{amino}$,
aryl-($C_1\text{-}C_4\text{-alkyl}$)- or heteroaryl-($C_1\text{-}C_4\text{-alkyl}$)-, wherein each of the aryl-($C_1\text{-}C_4\text{-alkyl}$)- or heteroaryl-($C_1\text{-}C_4\text{-alkyl}$)- is optionally substituted one or more times by halogen, $C_1\text{-}C_4\text{-alkyl}$, $C_1\text{-}C_4\text{-alkoxy}$ or $\text{di}(C_1\text{-}C_6\text{-alkyl})\text{amino}$;

- 15 R^{22} is H, $C_1\text{-}C_{10}\text{-alkyl}$, which is optionally substituted one or more times by F, $C_1\text{-}C_8\text{-alkoxy}$, $\text{di}(C_1\text{-}C_8\text{-alkyl})\text{amino}$ or phenyl,
phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is
optionally substituted one or more times by halogen, -CN, $C_1\text{-}C_3\text{-alkyl}$, $C_1\text{-}C_3\text{-alkoxy}$ or CF_3 ;

- 20 R^{23} is H or $C_1\text{-}C_{10}\text{-alkyl}$;

- R^{24} is H, $C_1\text{-}C_{10}\text{-alkyl}$, which is optionally substituted one or more times by F, $C_1\text{-}C_8\text{-alkoxy}$, $\text{di}(C_1\text{-}C_8\text{-alkyl})\text{amino}$ or phenyl,
phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is
25 optionally substituted one or more times by halogen, -CN, $C_1\text{-}C_3\text{-alkyl}$, $C_1\text{-}C_3\text{-alkoxy}$ or CF_3 ;

- R^{25} is H or $C_1\text{-}C_{10}\text{-alkyl}$;

- R^{26} is $C_1\text{-}C_{10}\text{-alkyl}$, which is optionally substituted one or more times by F, OH,
30 $C_1\text{-}C_8\text{-alkoxy}$, aryloxy, $C_1\text{-}C_8\text{-alkylmercapto}$, $C_1\text{-}C_8\text{-alkylamino}$, or $\text{di}(C_1\text{-}C_8\text{-alkyl})\text{amino}$,
 CF_3 ,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

5 R²⁷ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino, CF₃,

10 optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

wherein heteroaryl is a residue of a 5-membered to 10-membered, aromatic, monocyclic or bicyclic heterocycle containing one or more heteroatoms selected from the group consisting of N, O and S;

15 wherein aryl is phenyl, naphth-1-yl or naphth-2-yl;

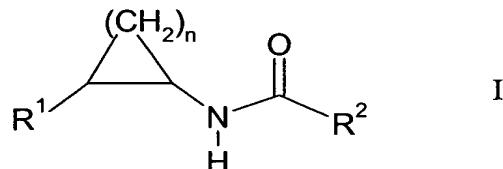
m is 0, 1 or 2; and

20 n is 1, 2, 3 or 4;

or a stereoisomer or a mixture of stereoisomers in any ratio of the compound, or a pharmaceutically acceptable salt of the compound, stereoisomer or mixture of stereoisomers of the compound.

25 9. A method for treatment of cardiovascular diseases, stable or unstable angina pectoris, coronary heart disease, Prinzmetal angina, acute coronary syndrome, heart failure, myocardial infarction, stroke, thrombosis, peripheral artery occlusive disease, endothelial dysfunction, atherosclerosis, restenosis, endothel damage after PTCA, hypertension, essential
30 hypertension, pulmonary hypertension, secondary hypertension, renovascular hypertension, chronic glomerulonephritis, erectile dysfunction, ventricular arrhythmia, diabetes, diabetes complications, nephropathy, retinopathy, angiogenesis, asthma bronchiale, chronic renal

failure, cirrhosis of the liver, osteoporosis, restricted memory performance or a restricted ability to learn, or for the lowering of cardiovascular risk of postmenopausal women or of women taking contraceptives, in a patient in need thereof, comprising administering to such patient a pharmaceutically effective amount of a compound of the formula I,



5

wherein:

R¹ is aryl or heteroaryl, each of which is optionally substituted one or more times by C₁-C₆-alkyl, halogen, CF₃, C₁-C₆-alkoxy, C₁-C₆-alkylmercapto, -CN, COOR¹⁰, CONR¹¹R¹²,
10 NR¹³R¹⁴, S(O)_mR¹⁵ or S(O)₂NR¹⁶R¹⁷;

R² is aryl or heteroaryl, each of which is optionally substituted one or more times by halogen, -CN, -NH₂, C₃-C₅-alkandiyil, phenyl, heteroaryl, aryl-substituted C₁-C₄-alkyl, heteroaryl-substituted C₁-C₄-alkyl, -CF₃, -NO₂, -OH, phenoxy, benzyloxy, (C₁-C₁₀-alkyl)-COO-, -S(O)_mR²⁰, -SH, phenylamino, benzylamino, (C₁-C₁₀-alkyl)-CONH-, (C₁-C₁₀-alkyl)-CO-N(C₁-C₄-alkyl)-, phenyl-CONH-, phenyl-CO-N(C₁-C₄-alkyl)-, heteroaryl-CONH-, heteroaryl-CO-N(C₁-C₄-alkyl)-, (C₁-C₁₀-alkyl)-CO-, phenyl-CO-, heteroaryl-CO-, CF₃-CO-, -OCH₂O-, -OCF₂O-, -OCH₂CH₂O-, -CH₂CH₂O-, -COOR²¹, -CONR²²R²³, -C(NH)-NH₂, -SO₂NR²⁴R²⁵, R²⁶SO₂NH-, R²⁷SO₂N(C₁-C₆-alkyl)-,

20 optionally substituted C₁-C₁₀-alkyl, optionally substituted C₂-C₁₀-alkenyl, optionally substituted C₂-C₁₀-alkynyl, optionally substituted C₁-C₁₀-alkoxy, optionally substituted C₁-C₁₀-alkylamino, optionally substituted di(C₁-C₁₀-alkyl)amino, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the group consisting of F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, NH₂, C₁-C₈-alkylamino and di(C₁-C₈-alkyl)amino, or

25 a residue of a saturated or partially unsaturated aliphatic monocyclic 5- to 7-membered heterocycle containing 1, 2 or 3 heteroatoms selected from the group consisting of N, O and S, wherein the heterocycle is optionally substituted one or more times by halogen,

C_1-C_3 -alkyl, C_1-C_3 -alkoxy, OH, oxo or CF_3 , and wherein the heterocycle is optionally condensed to the aryl group or heteroaryl group representing R^2 , and

wherein for each aryl or heteroaryl as R^2 bearing an aryl, heteroaryl, phenyl, aryl-containing, heteroaryl-containing or phenyl-containing group as an optional substituent, that
5 each aryl, heteroaryl, phenyl, aryl-containing, heteroaryl-containing and phenyl-containing group is optionally substituted one or more times by halogen, -CN, C_1-C_3 -alkyl, OH, C_1-C_3 -alkoxy or CF_3 ;

R^{10} is H, C_1-C_6 -alkyl or benzyl, wherein the phenyl group of the benzyl is optionally
10 substituted one or more times by halogen, -CN, C_1-C_3 -alkyl, C_1-C_3 -alkoxy or CF_3 ;

R^{11} is H, C_1-C_6 -alkyl, which is optionally substituted by phenyl, phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is optionally substituted one or more times by halogen, -CN, C_1-C_3 -alkyl, C_1-C_3 -alkoxy or CF_3 ;

15

R^{12} is H or C_1-C_6 -alkyl;

R^{13} is H, C_1-C_6 -alkyl,

optionally substituted phenyl, optionally substituted benzyl, optionally
20 substituted heteroaryl, optionally substituted phenyl-CO-, or optionally substituted heteroaryl-CO-, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the group consisting of halogen, -CN, C_1-C_3 -alkyl, C_1-C_3 -alkoxy and CF_3 ;

25 R^{14} is H or C_1-C_6 -alkyl;

R^{15} is C_1-C_6 -alkyl, CF_3 ,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted substituents are selected from one or more of the
30 group consisting of halogen, -CN, C_1-C_3 -alkyl, C_1-C_3 -alkoxy and CF_3 ;

R^{16} is H, C_1 - C_6 -alkyl, which is optionally substituted by phenyl, phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl, and heteroaryl is optionally substituted one or more times by halogen, -CN, C_1 - C_3 -alkyl, C_1 - C_3 -alkoxy or CF_3 ;

5 R^{17} is H or C_1 - C_6 -alkyl;

R^{20} is C_1 - C_{10} -alkyl, which is optionally substituted one or more times by F, OH, C_1 - C_8 -alkoxy, aryloxy, C_1 - C_8 -alkylmercapto, C_1 - C_8 -alkylamino, or di(C_1 - C_8 -alkyl)amino, CF_3 ,

10 optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C_1 - C_3 -alkyl, C_1 - C_3 -alkoxy and CF_3 ;

R^{21} is H,

15 C_1 - C_{10} -alkyl, which is optionally substituted one or more times by F, C_1 - C_8 -alkoxy or di(C_1 - C_8 -alkyl)amino,
aryl-(C_1 - C_4 -alkyl)- or heteroaryl-(C_1 - C_4 -alkyl)-, wherein each of the aryl-(C_1 - C_4 -alkyl)- or heteroaryl-(C_1 - C_4 -alkyl)- is optionally substituted one or more times by halogen, C_1 - C_4 -alkyl, C_1 - C_4 -alkoxy or di(C_1 - C_6 -alkyl)amino;

20 R^{22} is H, C_1 - C_{10} -alkyl, which is optionally substituted one or more times by F, C_1 - C_8 -alkoxy, di(C_1 - C_8 -alkyl)amino or phenyl,
phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is
optionally substituted one or more times by halogen, -CN, C_1 - C_3 -alkyl, C_1 - C_3 -alkoxy or CF_3 ;

25 R^{23} is H or C_1 - C_{10} -alkyl;

R^{24} is H, C_1 - C_{10} -alkyl, which is optionally substituted one or more times by F, C_1 - C_8 -alkoxy, di(C_1 - C_8 -alkyl)amino or phenyl,

30 phenyl, indanyl or heteroaryl, wherein each phenyl, indanyl and heteroaryl is
optionally substituted one or more times by halogen, -CN, C_1 - C_3 -alkyl, C_1 - C_3 -alkoxy or CF_3 ;

R²⁵ is H or C₁-C₁₀-alkyl;

R²⁶ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino,

5 CF₃,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

10 R²⁷ is C₁-C₁₀-alkyl, which is optionally substituted one or more times by F, OH, C₁-C₈-alkoxy, aryloxy, C₁-C₈-alkylmercapto, C₁-C₈-alkylamino, or di(C₁-C₈-alkyl)amino,

CF₃,

optionally substituted phenyl or optionally substituted heteroaryl, wherein the optional substituents of the optionally substituted phenyl and heteroaryl are selected from one or more of the group consisting of halogen, -CN, C₁-C₃-alkyl, C₁-C₃-alkoxy and CF₃;

wherein heteroaryl is a residue of a 5-membered to 10-membered, aromatic, monocyclic or bicyclic heterocycle containing one or more heteroatoms selected from the group consisting of N, O and S;

20

wherein aryl is phenyl, naphth-1-yl or naphth-2-yl;

m is 0, 1 or 2; and

n is 1, 2, 3 or 4;

25

or a stereoisomer or a mixture of stereoisomers in any ratio of the compound, or a pharmaceutically acceptable salt of the compound, stereoisomer or mixture of stereoisomers of the compound.

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